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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,115	09/29/2006	Yoshiaki Nagara	5000-5263	2425

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EXAMINER

HOLLWEG, THOMAS A

ART UNIT	PAPER NUMBER
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2879

NOTIFICATION DATE	DELIVERY MODE
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12/24/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/534,115	Applicant(s) NAGARA ET AL.	
	Examiner Thomas A. Hollweg	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-6,8,9,11,12,14,15,17,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,8,9,11,12,14,15,17,19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Acknowledgment of Amendment

1. Applicant's Amendment, received September 24, 2008, is acknowledged. Claims 3, 7, 10, 13, 16 and 18 are cancelled. No claims are added. Claims 1, 2, 4-6, 8, 9, 11, 12, 14, 15, 17, 19 and 20 are currently pending.
2. Amendments to claims 5 and 8, and the cancellation of claim 7 is acknowledged. Objections to these claims for minor informalities are withdrawn.
3. The cancellation of claims 10 and 18 is acknowledged. Objections to the drawings for not showing the features contained in these claims are withdrawn.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4-6, 8, 9, 11, 12, 14, 15, 17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al., U.S. Patent No. 6,566,807 B1, in view of Uchida et al., U.S. Patent No. 6,376,694 B1.
6. With regard to claim 1, in figure 3, Fujita discloses an organic electroluminescent device comprising a pair of electrodes (2, 8) and a plurality of organic compound layers (7, 5, 4, 31), which include an electron transport layer (7), provided between the pair of electrodes (2, 8), the electron transport layer (7) including at least a first organic compound (17) and a second organic compound (not separately labeled) (col. 7, lines

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3-12, col. 12-49). Fujita also discloses that second organic compound is Alq3 that is doped with the first organic compound (col. 24, line 42 – col. 26, line 50). Fujita further discloses that the first organic compound (17) is from 1% or more to 50% or less by weight of the total weight of the electron transport layer (Comparative Examples 10-12 and Examples 22-24 disclose electron transport layers that meet this limitation, based on the respective deposition of the first organic compound and the second organic compound in the electron transport layer (col. 24, line 42 – col. 26, line 50)).

7. Fujita does not expressly disclose that the first organic compound is a silole derivative. Uchida teaches a silole derivative compound that may be applied to functional materials in an organic EL display to improve efficiency and longevity of the display (col. 2, line 30 – col. 3, line 67). Uchida further teaches that the silole derivative can be added to an electron transport layer to take advantage of the electric properties of the silole ring (col. 7, lines 10-26).

8. At the time of invention, it would have been obvious for a person having ordinary skill in the art to construct the Fujita organic electroluminescent device where the first organic compound is the silole derivative, taught by Uchida, to improve the efficiency and longevity of the device. In this modified device the first organic compound possesses a higher electron mobility than the second organic compound; and the second organic compound possesses a higher glass transition temperature than the first organic compound.

9. With regard to claim 2, in figure 3, Fujita discloses an organic electroluminescent device comprising a pair of electrodes (2, 8) and a plurality of organic compound layers

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(7, 5, 4, 31), which include an electron transport layer (7), provided between the pair of electrodes (2, 8), the electron transport layer (7) including at least a first organic compound (17) and a second organic compound (not separately labeled) (col. 7, lines 3-12, col. 12-49). Fujita also discloses that second organic compound is Alq3 that is doped with the first organic compound (col. 24, line 42 – col. 26, line 50). Fujita further discloses that the first organic compound (17) is from 1% or more to 50% or less by weight of the total weight of the electron transport layer (Comparative Examples 10-12 and Examples 22-24 disclose electron transport layers that meet this limitation, based on the respective deposition of the first organic compound and the second organic compound in the electron transport layer (col. 24, line 42 – col. 26, line 50)).

10. Fujita does not expressly disclose that the first organic compound is a silole derivative. Uchida teaches a silole derivative compound that may be applied to functional materials in an organic EL display to improve efficiency and longevity of the display (col. 2, line 30 – col. 3, line 67). Uchida further teaches that the silole derivative can be added to an electron transport layer to take advantage of the electric properties of the silole ring (col. 7, lines 10-26).

11. At the time of invention, it would have been obvious for a person having ordinary skill in the art to construct the Fujita organic electroluminescent device where the first organic compound is the silole derivative, taught by Uchida, to improve the efficiency and longevity of the device. In this modified device the first organic compound possesses a higher electron mobility than the second organic compound; and the first and second organic compounds are selected so that a second organic

electroluminescent device has a longer initial luminance half-life than a first organic electroluminescent device, provided that the first organic electroluminescent device has an electron transport layer formed only of the first organic compound, and the second organic electroluminescent device has an electron transport layer formed only of the second organic compound.

12. With regard to claim 4, the modified Fujita and Uchida organic electroluminescent device of claim 1 discloses that the first organic compound has a molecular weight of 400 or more (Uchida, col. 2, line 30 – col. 3, line 67).

13. With regard to claim 5, the modified Fujita and Uchida organic electroluminescent device of claim 1 discloses that the second organic compound is a metal complex (Fujita, col. 24, line 42 – col. 26, line 50).

14. With regard to claim 6, the modified Fujita and Uchida organic electroluminescent device of claim 1 discloses that the second organic compound is a quinolinolate metal complex (Fujita, col. 24, line 42 – col. 26, line 50).

15. With regard to claim 8, the modified Fujita and Uchida organic electroluminescent device of claim 1 discloses that the first and second organic compounds are mixed in the electron transport layer (Fujita, col. 24, line 42 – col. 26, line 50).

16. With regard to claim 9, the claim limitation “formed by co-deposition of the first and second organic compounds” is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the

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subject product-by-process claim limitation has been considered, but not patentably distinct over Fujita and Uchida (see MPEP 2113). Examiner notes that the modified Fujita and Uchida organic electroluminescent device of claim 8 discloses that the electron transport layer is formed by co-deposition of the first and second organic compounds (Fujita, col. 24, line 42 – col. 26, line 50).

17. With regard to claim 11, the modified Fujita and Uchida organic electroluminescent device of claim 1 discloses that the electron transport layer has a thickness of from 5 to 100 nm (Fujita, col. 24, line 42 – col. 26, line 50).

18. With regard to claim 12, the modified Fujita and Uchida organic electroluminescent device of claim 1 discloses that a hole injection layer (3), a hole transport layer (31) and a light-emitting layer (52) are further provided between the pair of electrodes (2, 8) as the organic compound layer (best shown in Fujita figure 12, col. 13, lines 17-55).

19. With regard to claim 14, the modified Fujita and Uchida organic electroluminescent device of claim 2 discloses that the first organic compound has a molecular weight of 400 or more (Uchida, col. 2, line 30 – col. 3, line 67).

20. With regard to claim 15, the modified Fujita and Uchida organic electroluminescent device of claim 2 discloses that the second organic compound is a metal complex (Fujita, col. 24, line 42 – col. 26, line 50).

21. With regard to claim 17, the modified Fujita and Uchida organic electroluminescent device of claim 2 discloses that the first and second organic

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compounds are mixed in the electron transport layer (Fujita, col. 24, line 42 – col. 26, line 50).

22. With regard to claim 19, the modified Fujita and Uchida organic electroluminescent device of claim 2 discloses that the electron transport layer has a thickness of from 5 to 100 nm (Fujita, col. 24, line 42 – col. 26, line 50).

23. With regard to claim 20, the modified Fujita and Uchida organic electroluminescent device of claim 2 discloses that a hole injection layer (3), a hole transport layer (31) and a light-emitting layer (52) are further provided between the pair of electrodes (2, 8) as the organic compound layer (best shown in Fujita figure 12, col. 13, lines 17-55).

Response to Arguments

24. With regard to the arguments concerning the weight percentage limitation of the first organic compound in the electron transport layer, Fujita gives at least 6 specific examples (Comparative Examples 10-12 and Examples 22-24) of electron transport layers that comprise a first organic material and a second organic material. Fujita describes at least different deposition rate ratios for the two materials, which together with the mass of each material, determines the resulting weight ratio of the two materials in the resulting layer. This disclosure anticipates the weight ratio limitation in amended claims 1 and 2.

25. With regard to applicant's argument that "Uchida does not... teach that the silole derivative may be directly incorporated within the electron transport layer itself." Uchida states, in the section relied upon and cited in the rejection that incorporates Uchida, that

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"[t]he silole derivative of the present invention can be widely applied... to electrically functional materials," such as electron transport layers. Further, Uchida states that "an electron transporting material, etc. can be added to the silole derivative layer" (Uchida, col. 7, lines 10-26).

26. This teaching, combined with the disclosure of Fujita, where a second material is directly incorporated within the electron transport layer, to improve the function of the electron transport layer, provides both the teaching and motivation for the combination of Fujita and Uchida. For these reasons, applicant's arguments are not found to be persuasive.

Conclusion

27. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

28. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas A. Hollweg whose telephone number is (571)

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270-1739. The examiner can normally be reached on Monday through Friday 7:30am-5:00pm E.S.T..

30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

31. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TH/

/NIMESHKUMAR D. PATEL/
Supervisory Patent Examiner, Art Unit 2879